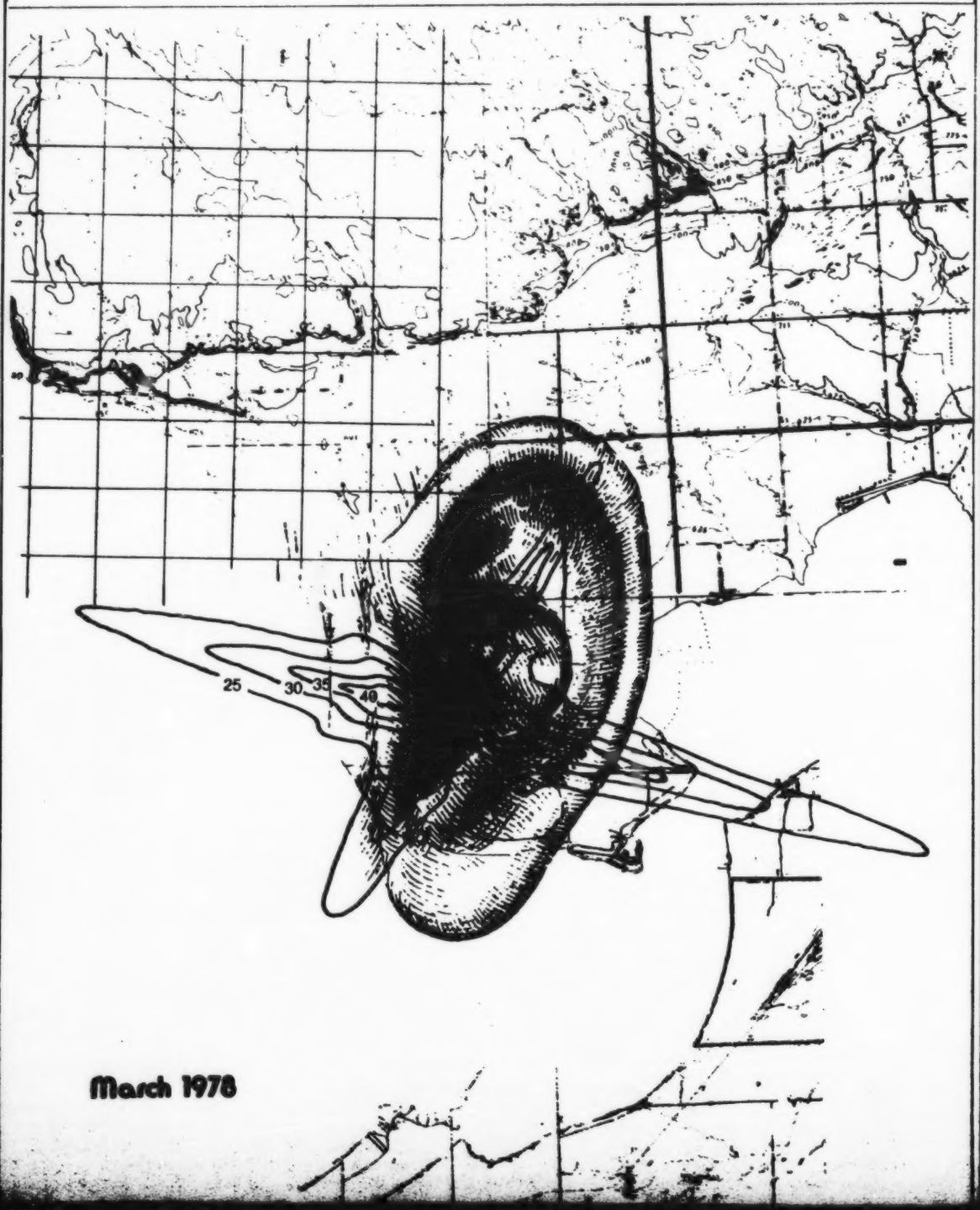
Ontario
Ministry of
Housing

Land-use policy near airports -

based on the Noise Exposure Forecast (NEF) system



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Provincial land use policies established in 1969 to protect lands near airports have been revised by the Ministry of Housing through the adoption of a more accurate system of measuring discomfort caused by aircraft noise.

The new policy is based on the NEF (Noise Exposure Forecast) system which reflects the noise produced by all types of aircraft at an airport, taking into consideration the number of flights, the duration of the noise, the time of day and the frequency components of the sound (pure tones).

All land use proposals near airports must now adhere to the NEF Land Use Compatibility Table (below). The applicable NEF values should be determined from NEF or NEP contour maps, based on contours supplied by Transport Canada or by the Department of National Defence (see opposite). This table has been designed to reflect CMHC policy related to residential development* and also contains policies for non-residential uses.

The general principle underlying the restrictions is that the outdoor noise level should govern permissible uses of a property. However, some indoor uses which make almost no use of the outdoors may be permitted to almost any noise level provided they meet CMHC standards for acoustic insulation and ventilation. The latter requirement is necessary to ensure that the acoustic insulation value is not lost through the opening of windows.

* New Housing and Airport Noise, N.H.A. 5185 Metric Edition.

NEF land use compatibility table

Land uses (1)	Noise exposure forecast values				
	0	28	30	35	40
Group I residential, passive use park, school, library, church, theatre, auditorium, hospital nursing home, camping or picnic area	In this range, noise is not usually a problem.		**Discretionary Range** All buildings must conform to Acoustic Design Criteria (2) (3). Some annoyance will occur in this range but residential development will be acceptable if approved by the municipality (2)		
Group II hotel, motel, retail or service commercial, office, athletic field, playground, stadium, outdoor swimming pool	In this range, noise is not usually a problem.		**Discretionary Range** The characteristics of each proposed use must be studied and appropriate noise insulation must be incorporated into building design (3).		
Group III industrial, warehousing, arena, general agriculture, animal breeding (4).	In this range, noise is not usually a serious problem			**Discretionary Range** Most Group III uses are permissible in this range, provided ancillary uses are adequately insulated (3).	

Notes

(1) Uses not specifically mentioned should be compared to the uses listed, classified in the most appropriate Group and regulated accordingly.

(2) For residential uses, refer to "New Housing and Airport Noise", N.H.A. 5185-1-78 and any amendments thereto. Acoustic design must include adequate ventilation. The developer of a residential project must undertake to inform prospective tenants or purchasers of the possible noise problem.

(3) For non-residential uses, refer to the Acoustic Design Criteria opposite.

(4) Research has shown that most animals become conditioned to high noise levels. However, fur farms, and any use likely to create a bird hazard, such as a feed lot or stockyard, should not be located closer to an airport than as recommended by Transport Canada in "Land Use in the Vicinity of Airports", document S-77-4.

Acoustic design criteria for non-residential uses

The procedure described in Section E of "New Housing and Airport Noise" should be adapted to meet required sound insulation for non-residential buildings. Table 1 below shows the correction factor to be used with Table 2 of the CMHC handbook to determine the Acoustic Insulation Factor (AIF) for other uses. AIF values corresponding to NEF values above the 35 contour are obtained by extrapollation from the figures on Table 2 below.

Table 1

Correction factor

Hotel, motel	no correction
Private office area, conference room etc.	-5
General office areas, retail stores	-10

Hospitals, theatres, auditoriums, churches, libraries, schools and nursing homes are subject to the same requirements as residential uses.

Example 1

The AIF for a retail store within the 30 contour, assuming the room has 3 components, would be 30 – 10 = 20.

With reference to Table A of the CMHC handbook, assuming a window area = 30% of the floor area, the window could be a single pane of 2 mm. glass. Within the 40 contour, the AIF would be 40 – 10 = 30 and a similar store would need a single pane of 4 mm. or 5 mm. glass.

Example 2

A private office associated with an industrial use in the vicinity of the 45 NEF contour would have an AIF of 46 – 5 = 41. (Assuming 4 components). Assuming a window area = 25% of the floor area, triple glazing (a WT2-W1 window) would be required.

Table 2

Acoustic Insulation Factor †

No. of components forming room envelope	NEF												
	25	26	27	28	29	30	31	32	33	34	35	40	45
1	20	21	22	23	24	25	26	27	28	29	30	35	40
2	23	24	25	26	27	28	29	30	31	32	33	38	43
3	25	26	27	28	29	30	31	32	33	34	35	40	45
4	26	27	28	29	30	31	32	33	34	35	36	41	46

† Table 2 of the CMHC handbook "New Housing and Airport Noise" (1978 edition), expanded to include NEF values above 35.

NEF and NEP contour maps *

1. NEF contour maps

The currently available NEF contour maps which should be used are listed to the right. With the exception of Toronto International Airport (Malton), they are obtainable from local offices of the Canada Mortgage and Housing Corporation (C.M.H.C.). The Toronto Malton map is available from the Local Planning Policy Branch, Ministry of Housing, 3rd Floor, 56 Wellesley Street West, Toronto, M7A 1K4. (416-965-3938).

Airport	Date of Latest Revision	Projection Date
Ottawa	June, 1972	Summer 1976
Hamilton	April, 1973	**
London	Jan., 1975	Summer 1978
Thunder Bay	Oct., 1974	1976 +
Carp	May, 1973	**
Kingston	Sept., 1978	1986
Sudbury	June, 1973	1976
Buttonville	Aug., 1973	**
Toronto Island	April, 1978	1990
Oshawa	Aug., 1978	1985
Maple	Sept., 1973	**
Waterloo-Wellington	April, 1977	1985
Sault Ste. Marie	Sept., 1974	1976
C.F.B. Trenton	Jan., 1979	1984
Brantford	Aug., 1977	1991
North Bay	Aug., 1978	1985
Sarnia	Aug., 1978	1986
Pembroke	Oct., 1978	1986
Wiarton	Feb., 1979	**
Toronto (Malton)***	Aug., 1979	1986

* This list was updated in January, 1980.

** General Aviation (No date).

*** Land use proposals should not conflict with the 1995 NEP or with the 1986 NEF contours for Toronto (Malton).

2. NEP contour maps

In some cases, the relatively short-range NEF maps published by C.M.H.C. are not considered appropriate by the Ministry of Housing for land use planning purposes and the Noise Exposure Projection (NEP) contours representing a longer range projection should be used. The NEP contour maps which are currently available from the Local Planning Policy Branch, Ministry of Housing, are listed below.

Airport	Date of Latest Revision	Projection Date
Windsor	Oct., 1978	1985
Toronto (Malton)*	July, 1976	1995

* Land use proposals should not conflict with the 1995 NEP or with the 1986 NEF contours for Toronto (Malton).

Up-to-date contours for other airports are scheduled to be produced by Transport Canada and will be added to the list. In addition, it is expected that existing contour maps will be reviewed and updated from time to time.

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